



Index

Absorbable surgical implants, 35
 see also Biodegradeable...

Acoustic streaming, 158, 159

AIDS therapy, nanoparticles used, 132, 133

Albumin
 adsorption on to CaHA, 89-90
 adsorption on to TCPS, 101, 103-4
 nanoparticles, 132

Alginates, disadvantages for cell encapsulation, 4

p-Aminohippuric acid (PAH), effect of ultrasound on release, 156-7

Anterior cruciate ligament (ACL) substitutes, 13-14
 fixing of, 14

Antibiotic treatments (in surgery)
 controlled-release, 150-3
 perioperative, 96, 149

Anti-inflammatory drugs
 controlled-release systems for, 122-9
 gastrointestinal lesions caused, 128
 ultrasound-mediated transdermal delivery of, 157, 158
 see also Indomethacin

Aortic endothelial cells, seeding of
 GORE-TEX grafts by, 52, 53-4

Apo A-IV, adsorption on to PU surfaces, 92

Atomic force microscopy (AFM), 76
 PU surface studied, 91

Auger electron spectroscopy, 75

Bacterium subtilis, effect of antibiotic on
 Dacron grafts, 150, 151

Beer-Lambert equation, 87

Biocompatibility
 definition, 11
 effect of chemical functional groups, 47-9
 hyaluronic ester polymers, 165-7
 poly-L-lactide, 8, 28
 test methods, 164-5

Biodegradeable temporary fixation materials, 13, 21, 35
 requirements, 143

Biofix^R devices, 36

Biological substrate
 tooth-bone implant, 30
 intermediate layer, 31
 see also Collagen...composites;
 Endothelial cells...

BiomerTM (porous polyurethane)
 calcification of, 62
 surface studies, 80-1

Bioprosthetic heart valve tissue
 calcification of
 factors affecting, 67
 studies, 65, 66
 specimen preparation, 63

Bis(*p*-carboxyphenoxy)propane anhydride), copolymers with sebacic acid, enhanced erosion, 157

Bovine endothelial cells, seeding of
 GORE-TEX grafts by, 52, 53

Brain inflammation test, 165
 biocompatibility results, 166-7

Brij surfactants, 41-5, 132

Bulk-equilibrium reverse dialysis sac technique, release kinetics studied by, 127

Bursitis, treatment of, 157

C. viscosum lipase, 111
 amino acid compositional analysis, 112
 effect on trilaurin/PEA coating, 117-18
 hydrolysis of triglycerides by, 111
 effect of conjugation, 112-13
 morphine conjugate, 112
 inhibition by antibody complexation, 113

Calcification
 causes, 61
 effect of hydrophilicity, 65, 66, 67

Calcification studies, 62-8
 in-vitro calcification
 experimental methods, 63-4
 results, 64-5
 in-vivo calcification
 experimental methods, 63, 96-7
 results, 64, 97
 specimen preparation, 62-3

Calcium hydroxyapatite (CaHA), 86
 coating on implants, 11, 16, 30, 86
 plasma-protein adsorption on to surface, 88-90
 synthetic preparation, 87

Cancer therapy
 effect of ultrasound on chemotherapy, 157
 nanoparticles used, 132, 133

Carbon-fiber-reinforced prostheses, 12, 13

Cardiac prostheses
 Dacron, 149-53
 requirements, 96
 silicone-polyurethane elastomer, 96-9
 see also Vascular prostheses

Cardiac valve endocarditis, 149, 152

Carrageenin edema-induction test, 124
 effect of PLA nanocapsules, 126-7, 128-9

Cartilage cells, implantation on polymer scaffolds, 9

Cavitation (formation of bubbles), 159

Cell transplantation
 advantages, 3
 compared with whole-organ transplantation, 3
 synthetic polymeric structures for, 3-9
 cell-polymer scaffolds, 7-9
 membrane-based cell microencapsulation, 4-7

Cellulose acetate phthalate (CAP) microspheres, 111
 encapsulation procedure, 115
 naltrexone release from, 111
 SEM micrograph, 116

Cellulose derivatives, nanoparticles, 132

Cellulosic membranes
 drug-delivery systems, 114
 effect of ultrasound on diffusion of electrolytes, 159-60

Cement disease, 12

Cementless isoelastic hip-joint prosthesis, 12

Centrifugal ultrafiltration technique, nanocapsule release kinetics studied by, 123, 124-5

Chondrocyte-polymer scaffolds, 9

Collagen-PHEMA composites, 19-20
 compared with pure PHEMA implants, 19, 20

Collagen-PMMA composites, 31

Collagenous biomaterials
 calcification studies
 effect of water absorption, 66
 sample preparation, 63

Complement C3, adsorption on to PU surface, 92

Contact-angle methods, 73-4, 75
 LDPE/PEO surfaces examined, 43-4

Controlled-release systems
 antibiotics (in surgery), 150-3
 anti-inflammatory drugs, 122-9
 hyaluronic acid polymers used, 163, 167

Controlled-release systems—*contd.*
 insulin delivery, 135–42
 naltrexone administration, 109–18
 ultrasonically modulated, 156–60

Corethane, 99

Corneal endothelial cells, seeding of
 GORE-TEX grafts by, 52, 53

Corneal inflammation test, 164–5
 biocompatibility results, 165–6

Crosslinking by Active Species of INert Gas (CASING), 44

Dacron-based cardiovascular grafts
 carbon coating on, 91
 infection of, 149
 control of, 150–3
 in-vitro infection experiments
 discussion, 153
 materials and methods, 150
 results, 151
 in-vivo infection experiments
 discussion, 153
 materials and methods, 150
 results, 151–2

Diabetes mellitus
 complications arising, 135
 glucose-sensitive insulin delivery systems for, 135–42
 treatments, 135

Dialysis sac diffusion technique, release kinetics studied by, 127

Diffusional transport, effect of ultrasound, 159–60

Diisopropyl aminoethyl methacrylate (DPA-EMA), 81

Dimethyl aminoethyl methacrylate copolymer with HEMA
 biocompatibility data, 48
 insulin delivery system using, 138–42
 swelling behavior, 136–8

Dimethyloxetane–tetrahydrofuran (THF-DMOX) copolymers, physical properties, 60

Drug delivery systems
 CAP used, 111, 115–18
 hyaluronic acid polymers used, 163, 167
 indomethacin-PLA nanocapsules, 122–9
 insulin delivery matrices, 135–42, 156
 MVE/MA copolymer used, 110–11, 114–15
 naltrexone administration devices, 109–18
 PCL copolymers used, 143
 responsive systems, 155
 ultrasonically modulated, 156–60

Edema-induction test, 124
 effect of PLA nanocapsules, 126–7, 128–9

Electron microscopy for chemical analysis (ESCA), 72–3, 75
 advantages, 72
 applications
 LDPE/PEO surfaces, 42–3
 plasma-deposited films, 77–9
 polyurethane surfaces, 80–1
 derivatization used, 78
 factors affecting, 77
 reactions, 77

Electron microscopy for chemical analysis—*contd.*
 information derived, 72
 schematic diagram, 73

Endothelial cells
 action of, 51, 101
 seeding on to vascular grafts, 51–5
see also Human endothelial cells

Environmental scanning electron microscopy (ESEM), 158

Enzyme immunoassay (ESA), albumin/fibronectin determined, 103

Externally regulated drug delivery systems, 155

Extracellular matrix (ECM)
 components, 52
 endothelial cell seeding improved by, 51–2
 glutaraldehyde treatment, 53, 54
 GORE-TEX graft surfaces coated with, 52–3

Fibrin sealant, antibiotic-release in Dacron grafts, 150–3

Fibrinogen adsorption
 calcium hydroxyapatite surface, 88
 effect of PEO on LDPE, 44–5
 experimental test method for, 42
 LTI carbon surface, 91
 polyurethane surface, 92

Fibronectin
 adhesion/spreading of endothelial cells affected by, 106
 adsorption on polyethylene, 104–6
 adsorption on polystyrene, 101, 103–4
 hydrophobic polymers treated with, 101, 104
 vascular grafts treated with, 52

Fourier transform infrared/attenuated total reflectance (FTIR-ATR) spectroscopy, 75

Gas discharge treatment, 42, 76
 effect on LDPE/PEO, 43–5

Gastrointestinal lesions
 experimental methods of study, 123–4
 indomethacin-induced, 125–6
 reduction using liposomes, 121, 125, 127, 128
 reduction using nanocapsules, 122, 125–6, 127–8

Gelatine nanoparticles, 132

Gelfoam^R
 brain inflammation results, 166–7
 corneal inflammation results, 165
 source, 164

Gentamicin
 controlled-release system, 150
 release kinetics, 151, 153
 tissue content at implantation sites, 151–2
 Dacron grafts treated with, 150–3

Giant-celled granulomatous response, 13–14, 16
 absent in Rashel HMWPE nets, 15–16
see also Multinucleate foreign-body giant cells (MGC)

Glucose oxidase
 use in insulin delivery systems, 136
 reaction kinetics, 141–2
 swelling behavior of hydrogels, 138

Glucose-sensitive insulin delivery systems, 135–42
see also Insulin delivery systems

GORE-TEX vascular grafts, ECM-coated, 52–5

Hanes-Woolf plot, 113

Hard-tissue replacement, poly(HEMA)-collagen composite used, 19–20

Heart valve prosthesis, silicone-polyurethane elastomer used, 96–9

Hemopexin, adsorption on to PU surface, 92

Hepatocyte-polymer scaffolds, 8–9

Heroin addiction treatment, 109
 delivery devices for, 110–18

High-molecular-weight polyethylene (HMWPE)
 braid, 13–14
 net, 14–16

HIV-1-infected human macrophages, nanoparticles taken up, 133

Human endothelial cells (HEC)
 action of, 101
 interaction with polyethylene, 104–5
 interaction with polystyrene, 103–4

Human serum albumin (HSA), adsorption on to TCPS, 103–4

Hyaluronic acid polymers, drug delivery systems using, 163

Hyaluronic ester polymers, 164
 biocompatibility, 165–7

Hydrocortisone treatment
 effect of ultrasound, 157
 hyaluronic acid polymers used in delivery, 163

Hydrophilic polyurethane foams
 calcification affected by water absorption, 66
 sample preparation, 63

Hydrophilicity
 calcification affected by, 65, 66, 67
 HEC adhesion/spreading affected by, 101, 104

Hydroxyapatite-coated implants, 11, 16, 30

1,1-Hydroxyethylidene bisphosphonic acid (HEBP), calcification of PU inhibited by, 66

Hypol foams
 calcification affected by water absorption, 66
 sample preparation, 63

Immunoglobulins
 adsorption on to CaHA surfaces, 90
 adsorption on to polyethylene, 104, 105
 adsorption on to PU surfaces, 92

Indomethacin
 gastrointestinal lesions induced
 experimental methods, 123–4
 results, 125–6
 transdermal permeation affected by ultrasound, 158

Indomethacin-PLA nanocapsules, 122–9
 analytical evaluation, 123
 anti-inflammatory activity, 126–7, 128–9
 evaluation method used, 124

Indomethacin-PLA nanocapsules—*contd.*
 in-vitro release kinetics, 123, 124–5, 127
 preparation, 122–3

Infrared (IR) spectroscopy, 75

Insulin delivery systems, 135–42
 matrix system for, 136
 polymers used, 136, 156
 swelling behavior, 136–8
 release kinetics, 140–2
 ultrasound used, 156, 157

Interface membranes, orthopaedic implants, 11–12, 13, 16

Intermediate layers, tooth implants, 31

Inulin, transdermal permeation affected by ultrasound, 158

Knee joints, polyethylene braid used in treatment, 13–14

Lipase, use in controlled-release device, 111–13

Liposomes, 121
 gastrointestinal lesions reduced using, 121, 125, 127, 128

Liver cells, implantation on polymer scaffolds, 8–9

Local fluid accumulation (LFA), reaction to SR-PGA implants, 38

Loosening (of implants), causes, 12, 29

Low-density polyethylene (LDPE), non-fouling surface treatment of, 41–5

Low-temperature isotropic (LTI) carbon applications, 86
 plasma-protein adsorption on to surface, 90–1
 sample preparation, 87

Macrophage fusion, 13–14
 effect of chemical functional groups, 47–9

Mandibular fractures, PLA plates and screws used in treatment, 22–3, 25–6

D-Mannitol, transdermal permeation affected by ultrasound, 158

Maxillofacial traumatology, PLA plates/screws used, 21–8

Membrane-based cell micro-encapsulation, 4–7
 characterization of polymer, 5
 encapsulation techniques, 6–7
 polymer synthesis, 4–5
 toxicity of polymers, 5–6

Metallic implants, disadvantages, 13, 21

Methyl vinyl ether/maleic anhydride copolymers, drug release by erosion, 110–11, 114–15

6-Methylmorpholine-2,5-dione, copolymer with lactide, 144, 145

Michaelis–Menten kinetics, glucose oxidase, 141–2

Mitoxanthrone-loaded nanoparticles, 132

Monoclonal antibodies, 102
 F(ab')₂ fragments, 102
 platelet adhesion prevented by using, 105
 polyethylene treated with, 105, 106

Monoclonal antibodies—*contd.*
 polyethylene treated with, 104–6

Morphine-triggered naltrexone-delivery system, 109–18

Morpholine-2,5-diones, ring-opening polymerization, 144

Multinucleate foreign-body giant cells (MGC), 47

Naltrexone administration, 109
 delivery system for, 109–18
 components, 109, 110
 development of devices, 114–18
 enzyme-degradable protective coating, 109, 110, 111
 macroporous membrane, 110, 113–14
 rapid-delivery devices, 110, 115–18
 rate-controlling bio-erodible polymer, 109, 110–11
 reversibly inactivated enzyme, 109, 110, 111–13
 sustained-delivery devices, 110, 114–15

Nanocapsules, 121–2
 polyalkylcyanoacrylate, 122
 poly-D,L-lactide, 122–9
 anti-inflammatory activity evaluation, 124, 126–7, 128–9
 in-vitro release kinetics, 123, 124–5, 127
 preparation, 122–3

Nanoparticles, 121, 131
 advantages, 121, 131
 effect of coatings on body distribution, 41, 131–3
 indomethacin-loaded, 121–9
 polymers used, 122, 132
 surfactant-coated, 132–3

p-Nitroaniline, effect of ultrasound on release, 156

Non-fouling surfaces
 adsorption/desorption process, 42
 gas discharge treatment, 42
 importance, 41
 materials, 41–2
 surface analyses, 42

Non-steroidal anti-inflammatory drugs
 gastrointestinal lesions caused, 128
see also Anti-inflammatory drugs; Indomethacin

Non-woven manufacture, vascular grafts, 96

Orthopedic implants
 aseptic loosening of, 12
 tissue reaction to, 11–16

Oxetane–tetrahydrofuran (THF–OX) copolymers, physical properties, 60

Oxygen diffusion, effect of ultrasound, 159

Pellethanes (polyurethanes)
 calcification studies for films, 64, 65
 fiber spinning with, 96

PEO1K homopolymer, 42

Percutaneous absorption, effect of ultrasound, 159

Periodontal ligament, 30

Perioperative antibiotic treatment, 96, 149
 failure, 149

Phonophoresis, 157–8

Physostigmine, transdermal permeation affected by ultrasound, 158

Plasma-deposited films
 advantages in biomedical applications, 72
 preparation, 77
 surface analysis, 77–80
 ESCA used, 77–9
 SIMS used, 79–80

Plasma-protein adsorption, 85–93
 CaHA surface, 88–90
 LTI carbon surface, 90–1
 PU surface, 91–2

Poloxamer, nanocapsule/nanoparticle preparation using, 122, 132

Poloxamine surfactants, nanoparticle preparation using, 132, 133

Polyacetal hip-joint prosthesis, 12

Polyacrylamide gel electrophoresis (PAGE)
 advantages/disadvantages of 2-D technique, 86, 93
 experimental details, 87–8
 plasma-protein adsorption studies, 88–92
 CaHA surface, 88–90
 LTI carbon surface, 90–1
 PU surface, 91–2

Poly(2-acrylamido-2-methyl propane sulfate) (PAAMPS), bio-compatibility data, 48

Polyalkylcyanoacrylate nanoparticles, 121–2, 132

Polyanhydrides, effect of ultrasound on erosion, 156, 157, 158

Polyanions
 biocompatibility, 47, 48, 49
 intraocular lenses constructed, 49

Poly(bis(carboxylatophenoxy)-phosphazene) (PCPP)
 cell microencapsulation using, 6–7
 characteristics, 5
 degradation studies, 5
 PCPP–PLL membrane formed, 6–7
 synthesis, 4–5
 toxicity of calcium-crosslinked films, 5–6

Poly(bis(*p*-carboxyphenoxy)methane), enhanced erosion, 156

Polybutylcyanoacrylate nanoparticles, 132, 133

Poly- ϵ -caprolactone (PCL), 143
 copolymers
 degradation, 145–6
 synthesis, 144–5
 degradation, 145

Polycations, biocompatibility, 48

Polydepsipeptides, 144
 copolymers with PCL, 144–5

Polyesteramides
 PCL-based, 144
 degradation, 145–6
 kinetics of hydrolysis, 146
 synthesis, 144–5

PLA-based, 144
 degradation, 144

Polyesters, 7, 117
see also Poly(ethylene adipate);
 Poly(glycolic acid); Poly(lactic acid); Poly-L-lactide

Poly(ether urethane)
 surface studies, 80-1
see also Biomer; Polyurethane

Polyethylene
 in hip-joint prothesis, 12
 in knee-joint ligament replacement, 13-14
 non-fouling surface treatment of, 41-5
 precoated with fibronectin, 104-6
 precoated with monoclonal antibodies, 104-6
see also High-molecular-weight...; Low-density polyethylene

Poly(ethylene adipate) (PEA), CAP
 microspheres coated (together with trilaurin), 116-17

Poly(ethylene glycol) (PEG), porous PU films prepared using, 62

Poly(ethylene oxide) (PEO)
 adsorption/desorption on LDPE, 42
 gas discharge treatment, 42
 as non-fouling surface treatment, 41-5
 in polyether blends, 57, 58-9

Poly(ethylene terephthalate)
 cardiovascular prostheses
 infection of, 149
 control by controlled-release antibiotics, 150-3
see also Dacron...

Poly(glycolic acid) (PGA)
 hepatocyte-polymer scaffolds using, 8-9
 self-reinforced composites
 biodegradation, 38
 clinical applications, 36-7
 in-vivo properties, 37
 LFA/TSF clinical reactions, 38
 mechanical properties, 36

Poly(2-hydroxy ethyl methacrylate) (PHEMA)
 biocompatibility data, 48
 composites with collagen, 19-20
 copolymer with DMAEMA
 biocompatibility data, 48
 insulin delivery system using, 138-42
 swelling behavior, 136-8
 copolymer with PEA, biocompatibility data, 48
 copolymer with sodium methacrylate
 biocompatibility data, 48
 intraocular lens constructed, 49
 diffusion in porous implants, 66
 properties, 19
 swelling behavior, 140

Poly(α -hydroxy acids), 36
see also Poly(glycolic acid);
 Poly(lactic acid); Poly-L-lactide

Poly(lactic acid) (PLA), 7
 copolymer (with glycine units), 144
 degradation, 144, 145
 nanocapsules/nanoparticles, 122-9
 analytical evaluation, 123
 anti-inflammatory activity
 evaluation, 124, 126-7, 128-9
 in-vitro release kinetics, 123, 124-5, 127

Poly(lactic acid)—*contd.*
 nanocapsules/nanoparticles—*contd.*
 preparation, 122-3, 132

Poly-D,L-lactide. *See* Poly(lactic acid) (PLA)

Poly-L-lactide (PLLA)
 carbon-fiber-reinforced fracture plates, 13
 degradation *in vivo*, 24-5, 27
 hepatocytes attached to film, 8
 in-vivo evaluation
 experimental method, 22
 results, 24-5
 mechanical properties
 experimental methods, 22
 results, 24, 27
 molecular weights, 21-2
 self-reinforced composites
 in-vivo properties, 37
 mechanical properties, 36
 synthesis, 21

Poly(L-lysine) (PLL), PCPP-PLL
 membrane formed, 6-7

Polymer scaffolds, 7-9
 design requirements, 7-8
 in-vivo implantation studies, 8-9
 chondrocyte-polymer scaffolds, 9
 hepatocyte-polymer scaffolds, 8-9
 surface chemistries, 8
 vascularization of, 8-9

Poly(methyl isopropenyl ketone) (PMiPrK), compared with acetone-oxygen plasma-deposited films, 78, 79

Polymethylmethacrylate (PMMA)
 composite with collagen, 31
 nanoparticles, 132
 in orthopaedic implants, 12

Polyphosphazene polymers, use for cell encapsulation, 4-7

Poly(propylene oxide) (PPO), in polyether blends, 57

Polysorbate 80, nanoparticle preparation using, 132-3

Polystyrene (PS), 101
see also Tissue culture polystyrene

Polysulfone prostheses, 12-13

Polytetrafluoroethylene (PTFE) vascular grafts, 52
 endothelial seeding of, 52-5

Poly(tetramethylene oxide) (PTMO), 57
 crosslinked
 blends with PEO, 58-9
 crystallinity, 59-60
 melting temperature, 59-60
 temperature effects on crosslinking density, 59
see also Tetrahydrofuran copolymers

Polyurethane (PU)
 advantages in biomedical applications, 72, 95
 biodegradation, 95, 96, 98
 calcification studies, 62-8
 effect of water absorption, 65, 66
 sample preparation, 62
 compromise in properties, 95, 97
 hard/soft segments, 86, 87
 plasma-protein adsorption on to surface, 91-2
 silicone coated, vascular prostheses made from, 96-9
 surface studies, 80-1

Polyurethane—*contd.*
 2-D PAGE studies of plasma-protein adsorption results, 91-2
 sample preparation, 87
see also Hypol FHP 2002

Poly(vinyl acetate) (PVAc), compared with acetone-oxygen plasma-deposited films, 79

Poly(vinyl alcohol) (PVA), compared with acetone-oxygen plasma-deposited films, 79

Poly(vinyl methyl ketone) (PVMK), compared with acetone-oxygen plasma-deposited films, 78, 79

Prealbumin, adsorption on to PU surface, 92

Protein-repellent surfaces, 41

Pulsed drug delivery systems, 155

N-(1-Pyrrolidonyl)ethyl/acryl amide (PEA), copolymer with HEMA, biocompatibility data, 48

Radio-frequency gas discharge (RGD)
 LDPE/PEO treated by, 42
 results, 43-5
 schematic diagram of RF plasma reactor, 76
see also Plasma-deposited films

Rashel HMWPE net implants, 14-16

Reticuloendothelial system (RES), nanoparticles/liposomes removed by, 131

Rigid plate fixation, disadvantages, 13, 21, 35

Scaffold polymeric structures, 7-9
see also Polymer scaffolds

Scanning electron microscopy (SEM), 75
 cellulose acetate phthalate microspheres, 116
 collagen-PMMA-polymer implants, 31-2
 ECM-coated vascular grafts, 53, 54
 silicone-polyurethane vascular grafts, 97, 98

Scanning probe microscopy, 75, 76
 PU surface studied, 91

Scanning tunneling microscopy (STM), 75, 76
 LTI carbon surface studied, 90
 schematic diagram, 74

Secondary ion mass spectrometry (SIMS), 73, 75
 advantages, 75
 applications, 78, 79-80, 81
 information derived, 75
 schematic diagram, 74
 time-of-flight (TOF) technique used, 80

Self-regulated drug delivery systems, 109-18, 135-42, 155

Self-reinforced (SR) composites
 biodegradation, 37-8
 clinical applications, 36-7
 future development potential, 39
 in-vivo properties, 36, 37
 manufacture, 35-6
 mechanical properties, 36

Sharpey (collagenous) fibers, 30
 artificial fibers, 14, 32

Silicone rubber
applications, 96
PU vascular prostheses coated with, 96-9

Sodium methacrylate (NaMA)
copolymer with HEMA
biocompatibility data, 48
intraocular lens constructed, 49

Spinning process, polyurethane grafts made by, 96

Spray-coating
apparatus used, 116
CAP microspheres coated with trilaurin, 115-16

Staphylococcus aureus, effect of antibiotic on Dacron grafts, 150, 152, 153

Surface characterization
examples of use, 77-81
methods, 72-7
contact-angle methods, 73-4, 75
electron microscopy for chemical analysis, 72-3, 75
scanning probe microscopy, 75, 76
secondary ion mass spectrometry, 73, 75
summary of characteristics, 75
vibrational spectroscopy methods, 75-6
rationale for using, 71

Surfactants
body distribution of nanoparticles affected by, 132-3
non-fouling surfaces treated, 41-5

Surgicel®
brain inflammation results, 166-7
corneal inflammation results, 165
source, 164

Temporary fixation materials
PLA-carbon, 13
PLLA, 21-8
SR-PGA, 36-8
SR-PLLA, 36-8

Tetrahydrofuran copolymers
crystallinity, 60
melting temperature, 60
preparation, 58
see also Poly(tetramethylene oxide)

Tissue culture polystyrene (TCPS), proteins adsorbed on surface, 101, 103-4

Tooth-bone system, 30
implant
description, 30
examination, 31-2
ligament-like tissue formed at interface, 32, 33
preparation, 31

Transient sinus formation (TSF), reaction to SR-PGA implants, 38

Trilaurin, 111
CAP microspheres coated with, 116
effect of enzyme, 117-18
naltrexone leakage data, 116, 117
PEA added, 116-17
enzymatic hydrolysis, 111

Trimyristin, enzymatic hydrolysis, 111

Tripalmitin, enzymatic hydrolysis, 111

Tristearin, enzymatic hydrolysis, 111

Triton surfactants, 42, 44, 52

Tween 80, nanoparticle preparation using, 132-3

Ultrasound, 155
absorption of energy by tissues, 156
contact media used, 156

Ultrasound—*contd.*
diffusion enhanced by, 159-60
frequency ranges, 155
polymer erosion/degradation affected by, 156, 157
mechanisms, 158-9
wavelength calculation, 155

Ultrasound-assisted drug delivery systems
implant activation, 156-7
transdermal delivery, 157-8, 159
mechanisms suggested, 159

Vascular prostheses, 51-5, 57-60
Dacron, 149-53
endothelial seeded GORE-TEX, 51-5
polyether, 57, 60
requirements, 96
tetrahydrofuran copolymers, 60
see also Cardiac prostheses

Vibrational spectroscopy methods, 75-6
see also Infrared spectroscopy

Vroman effect, 85, 91

Whole-organ transplantation, limitations, 3

X-ray photoelectron spectroscopy (XPS), 72

Zygomatic fractures, PLA plates and screws used in treatment, 23, 26

